

Leica

PHOTOGRAPHY





Leica

PHOTOGRAPHY®

VOLUME 16 • NUMBER 3 • 1963

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Note:

This is the third and last issue of Leica Photography for 1963. The next issue will be No. 1, 1964. Since no fourth issue will appear this year, all unexpired subscriptions will be extended by one issue beyond their normal expiration date.



COVER

David Falconer

Our cover picture was made at a school in Cave Junction, Oregon for "smoke jumpers" who parachute into battle against forest fires for the U.S. Forest Service. Falconer, a staff photographer for The Oregonian in Portland, used an M2 and 135mm Hektor with High Speed Ektachrome, 1/500th at f/8.

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◀ INSIDE COVER

Robert Magrin

"Domenika" is not a portrait, but a personal and evocative impression of a particular child. The eye-catching *poin-tillism* effect was achieved by silhouetted lace in the foreground. For another effect, try propping up the picture and viewing it from about 10 or 15 feet away. M3, Summicron 50mm at f/5.6, 1/30th second. FP3 developed in Atomal Neu.

Leica Photography is published by E. Leitz, Inc., at 468 Park Avenue South, New York, N.Y. 10016, price forty cents. Copies are sent free of charge to all original purchasers of new Leica cameras or lenses residing within the United States of America and U.S. Territorial Possessions who have registered such new equipment with E. Leitz, Inc. To all others, a subscription fee of \$1.00 per year is charged in the U.S.A., and \$2.00 elsewhere. Single copies are on sale at photographic dealers' stores, or direct from the publisher.

The editors are happy to consider original articles on photography with the Leica and photographs taken with Leica cameras and lenses. All manuscripts and photographs should be accompanied by stamped, self-addressed return labels.



show place

BARRETT GALLAGHER'S NEW YORK



Central Park (35mm)

(Barrett Gallagher is a busy and much-traveled photographer who regards his home base with a loving and rather Olympian eye. His pictures of New York City celebrate not so much its overcrowded streets, its jittery traffic or its kaleidoscopic activities, but the undeniable grandeur of its collective architecture.

Turning the city's verticalness to his advantage, Gallagher has provided views of New York which are normally available only to pigeons, unsuccessful suicides and certain nerveless window cleaners. He has also chosen often to photograph the city during winters—some of them too old-fashioned for comfort.

By choice of viewpoint, of weather, of lens and perspective, Gallagher shows us New York City in a personal and unusual way. The accompanying text tells in his own words something of what went into making the photographs.)

I have been a New York City buff ever since the first time I had to cross from Grand Central to Penn station to get to school in Virginia. While at Cornell, I risked snowbanks and the then-rough Route 17 to spend every possible weekend in the city, and by standing through matinee and evening shows and Sunday afternoon benefits, I saw most of the shows that ran more than a few weeks.

In the summer of 1936, equipped with an ancient 8 x 10 Empire State View camera, a fragile tripod and some photofloods, I came to stay. There was a considerable depression and no jobs, so I made the rounds from magazine to magazine and agency to agency, with a fortunate break-through at *FOR-TUNE*, from which magazine we still receive an occasional assignment.

For years I lived in mid-Manhattan and took pictures in Boston, Chicago, Florida and New Jersey.



Lower Manhattan (90mm)

But I didn't have the nerve to try to photograph the city. It was too big. There was no starting place, and, I feared, no stopping place either. Then, in 1959, FORTUNE asked us, (my wife Timmie and I work as a team) to photograph all the buildings erected since World War II — a big order.

We started spotting likely windows, then going to the appropriate floor and asking the occupants for permission to open the window for a few minutes despite cold winds. Thanks to our assignment, we got excellent cooperation from most of the people we approached. Access to good vantage points had always been a major problem but the new buildings presented a new and formidable complication — many of them have windows which cannot be opened.

So, we started to frequent rooftops. The UN Building offered a special problem — the rooftop is enclosed by a wire screen too small to get a camera lens

through, so we had to stand upon a box and rest the camera on the top of the screen at arms length over head. As tilting a wide angle lens would result in considerable distortion we had to go on faith that the top of the UN Building was level, but decided that if that building was out of plumb, the whole UN was in jeopardy.

Next we graduated to helicopters, which have many advantages. But they are expensive, they rock and roll, (making it difficult to keep the horizon straight), and they vibrate. Also, Timmie was not happy about making banked turns with the door removed for the camera's benefit. Even when it is possible, for good reason, to procure a free ride from a Port Authority helicopter, arrangements must be made and scheduled several days in advance, and there are only one or two days a month when the humidity is low and the wind is from the West to blow smoke away from



Cityscape (35mm)

Woolworth Tower (200mm) ►

Triboro Bridge (200mm)







East River (50mm)

Geometry (200mm) ►

Manhattan so conditions are favorable for photography. Too much wind brings turbulence.

We have also used telephoto lenses through car windshields at 50 mph on the parkways and bridges. we have walked virtually every bridge in the area including the Newark-Holland Tunnel extension of the New Jersey Turnpike, and we are pretty well checked out on ferry boats too.

The range of wide angle and telephoto lenses fast enough to permit high shutter speeds is available

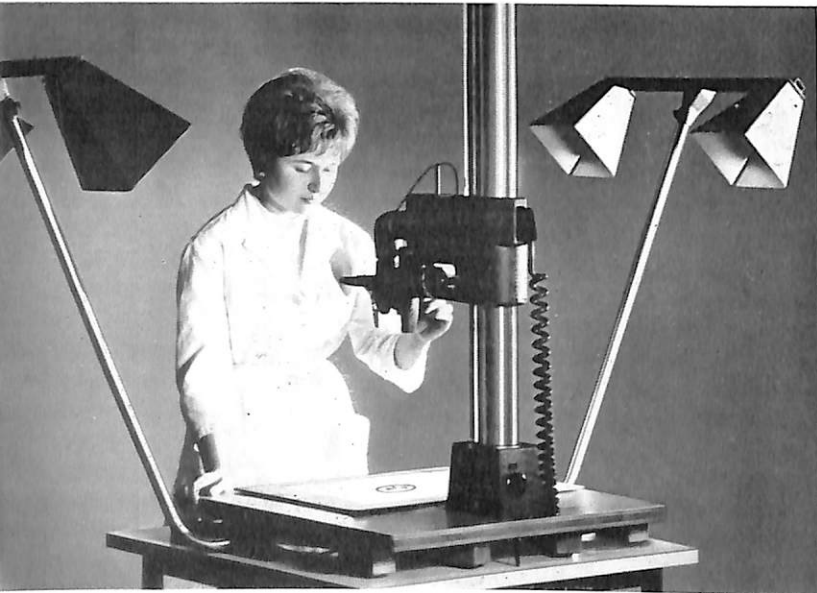
only for 35mm photography and are essential for this kind of photography. I carry the larger Benser case, which always holds a Leica M2. 21, 35, 50, 90 and 135mm lenses, a set of filters which fit all five lenses, hoods, meter, film and a series 8 Pola Screen. Timmie carries a small Benser case which carries, according to the day's needs, a Leica M3, a 200mm and Visoflex II, film, note book, or Uneeda Biscuits to feed the sea gulls.

Barrett Gallagher



new Reprovit IIa is universal copying tool

adds quality to quantity reproduction



The new Leitz Reprovit IIa is a high-precision copying device for use with all bayonet-mounting models of the Leica. It is extremely adaptable and can be used to do almost any kind of photographic reproduction work in quantity. Its high precision and unusual sturdiness are combined with amazing simplicity of operation, permitting even beginners to turn out high quality reproductions quickly and accurately.

Some of the features of the Reprovit IIa are:

- accurate, electrically-controlled exposures by means of electrical interval timer and an internal electro-magnetic release.
- Exact outlining of subject area, rapid focusing. Illuminated rectangle shows the exact lens-field, includes focusing target.
- 4-lamp subject illumination provides even, unvarying light. Self-adjusting black curtains give anti-reflection protection.
- Automatic lighting switch-over from projection-focusing to subject illumination.
- Automatic aperture control. Simple mechanism

sets diaphragm to full aperture for focusing, stops it down to f 11 for exposure.

- Extra-long continuous focusing range provides for reproduction ratios of from 1:19 (18 x 27-inch field) to 1:1 (1 x 1½ inch field).

universal copying tool

The Reprovit IIa can be used to make photographic reproductions of flat originals or solid objects in either black or white, and in sizes as large as 18 x 27 inches and as small as 1 x 1½ inches. Transparencies, drawings, paintings, maps, diagrams, book pages, castings, small machine parts, tools and instruments are a few of the items which can be copied with the Reprovit. It is also useful for short-run microfilming of documents when specialized microfilming equipment is either unavailable or uneconomical to use. There are only four simple steps required in making a copy with the new device: 1) switch on the light; 2) illuminate the exact subject area wanted and simultaneously focus the projected index marks sharply; 3) slide the stage to camera position; 4) set the exposure timer and release the shutter. The entire operation is so simple that even personnel unskilled in photography can turn out high quality work on the new Reprovit IIa.

Since the new device is used with the Leica "M" cameras, the same camera which is used for "in-plant," general photography can also be used for specialized copying assignments. In addition, the use of 35mm film cuts production costs and simplifies filing.

accessories

Among the accessories available for the Reprovit IIa are a framing box (for copying books and periodicals and other thick originals up to 5 inches thick and 11⅜" x 16⅞" in area,) an illuminating box for subjects up to 16 x 16½ inches (for copying transparent originals), a small-optics stage (for copying 35mm transparencies and magnified images), a 24mm Repro-Summar lens (for magnifications up to 4x), extension tubes for extreme close-up work and a focusing magnifier for critical focusing.

The lens supplied with the Reprovit IIa is the 50mm Focotar f 4.5, a highly-corrected 5-element

lens for close-up work up to a magnification of about 2x (with two Repro extension tubes). A standard 8 x 10 print of a 2x enlargement on the negative will provide about 15x enlargement of the subject.

To achieve the greatest degree of enlargement on the negative, the 24mm Repro-Summar f/4.5 is used. This is a 6-element scientific accessory lens especially computed for high on-film magnification up to about 7x (4x without extension tubes, 7x with three Repro extension tubes). A 7x enlargement on the negative will yield about a 55x subject enlargement on an 8 x 10 print.

built-in shutter release

An electro-magnetic camera shutter release is built into the projection head of the new Reprovit IIa. It is controlled by a special electric interval timer which can be preset to provide shutter speeds of from 1/2 sec. to 60 secs., with a setting accuracy of 1/10th of a second. Manual control of the timer is also possible.

Ordinarily, the timer is used for exposures longer than one second, since shorter automatic exposures are provided by the camera itself. This arrangement simplifies operation and provides consistent accuracy and reduces practically to the vanishing point any chance for induced vibration during exposure. And, since the lens on the Reprovit IIa is automatically closed down to f 11 as the camera is slid into taking position, exposure is ultimately simplified to the point of varying only the shutter time.

A detailed brochure on the Reprovit IIa and its accessories (No. 13-1b) is available from E. Leitz, Inc., 466 Park Avenue South, New York 16, N. Y.

The Reprovit IIa with 26 1/2 x 27 inch baseboard, built-in projection head with electro-magnetic camera release, special focusing stage for Leica "M" cameras, 4-lamp subject illuminator and 50mm Focotar f 4.5 lens and electric exposure timer costs \$942.00 (Cat. No. 16,789). The 24mm Repro-Summar f 4.5 lens (Cat. No. 16,780) is \$94.00.

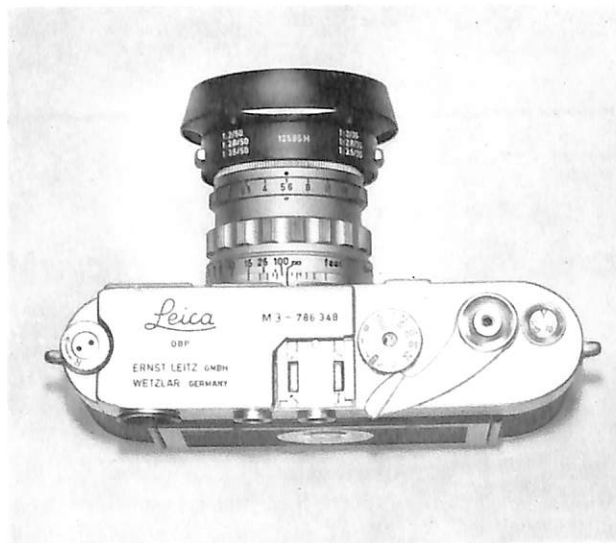
new lens hood ends "dark corner"

offbeat design is odd but logical

A new lens hood for 35 and 50mm lenses neatly solves the problem of the "dark corner" in the viewfinder. This is the partial blocking of the lower right corner of the viewfinder area by the outward spread of the rim of conventional lens hoods.

The new hood, however, has an odd and unorthodox inward slope, because of the principle on which it is designed. The design is based on the fact that the viewfinder itself has a certain angle of view. The rim of the hood, therefore, is made parallel to this angle, and the supporting structure for the rim is slotted. With the hood in place, the eye sees only the thin edge of the hood through the viewfinder. This appears as an almost invisible line rather than a solid section of the rim as would be the case with a conventional hood.

The new hood (cat. No. 12,585) can be used with all 35 and 50mm Leica lenses with 42mm flange diameter. Its price is \$7.80.



new Leica-Meter MR

CdS Meter aimed by Leica Finder



The brand-new Leica-Meter MR for Leica "M" models is similar in appearance and purpose to the MC model which it replaces, but quite different in function and ease of operation. It features a cadmium-sulfide photo-resistor cell which can be controlled to provide two sensitivity ranges. The low-light range of the meter is so sensitive that no extra booster cell is needed to make readings in very poor light, as was the case with previous meters.

The Leica-Meter MR, like the MC, couples to the shutter speed dial of "M" Leicas. It automatically sets the shutter speed needed for a given f/stop as the meter dial is aligned with the indicator needle. It can also be used to show the proper f/stop to use with a chosen shutter speed.

Its size and appearance are similar to that of the MC meter with a few differences. Notable is the addition of a needle release button which closes electrical circuits and releases the indicator needle to show the light level. There are also a sliding switch on the front of the meter and a white dot on the field through which the indicator needle moves. These are used together to check meter-battery strength. When the switch is pressed, the needle moves to the white dot when the battery is in good condition.

Another difference in the new CdS meter is the small size of its light window, compared to that of the MC meter with selenium photocell. The acceptance angle of the MR meter is only 27°.

narrow angle

The narrow acceptance angle of the new meter is one of its major features, since it makes possible highly selective exposure readings of important subject areas, even from camera position. What's more, the acceptance angle is equal to that of a 90mm lens on the Leica, so that the meter can be aimed by using the camera's 90mm bright-line frame. This provides bull's-eye accuracy of aim when making readings.

automatic needle lock

Another important aid to accuracy on the new meter is an indicator needle which locks into position automatically after the exposure level has been determined. Thus the light-level indicated by the needle is not affected by skylight, deep shadows or glare to which the meter may be exposed while being adjusted to show the exposure. The needle will not move until another exposure reading is deliberately taken.

The Leica-Meter MR is powered by a Mallory PX-13 "button" battery supplied with the meter and whose life expectancy is about two years in normal use.

The Leica-Meter MR, with CdS cell and Mallory PX-13 battery for all Leica "M" models (Cat. No. 14,210) is \$48.00.

low-voltage Pradovit N 24 projector

new model more powerful than Pradovit N

A new Leitz slide projector with a powerful 24-volt, 150-watt lamp system has just been introduced. Its light output is about midway between that of

conventional 300- and 500-watt projectors and about one-third greater than that of the Pradovit N (Leica Photography No. 2, 1961). Like the 12-volt 100-watt



Pradovit N (which will continue to be available), the new model combines high light output with reduced operating temperature.

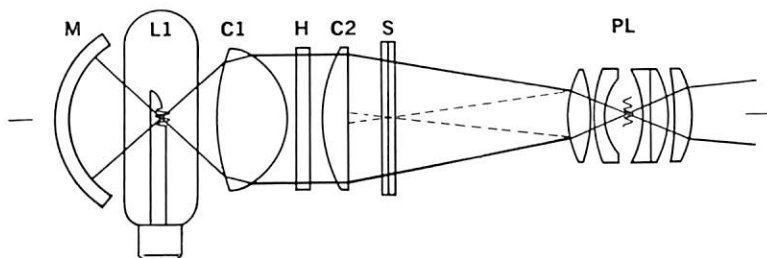
The modest operating temperature of the N 24 minimizes the tendency of cardboard-mounted slides to "pop" out of focus — a feature widely acclaimed in the other low-voltage Leitz projectors. The low operating temperature also increases the life of slides which are projected for long periods. The great depth of focus provided by the low-voltage lamp system is extra insurance against the need to refocus the projector from slide to slide.

Other features of the N 24 are:

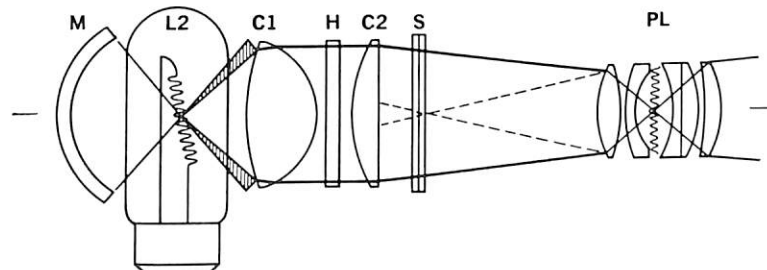
- Push-button, remote-cord control of focus and forward or reverse magazine travel.
- Forward-reverse controls duplicated by push-button on side of the projector.
- Uses Leitz magazines for 30, 36 or 50 slides, mounted, unmounted or intermixed.
- Accepts both 24 x 36 slides and 38 x 38mm "Super-slides."
- Illumination is less yellowish than that of line-voltage projectors. Truer color fidelity.
- Automatic screen black-out between slides and after final slide in magazine.
- Available with 90mm Colorplan f 2.5 lens or others from 50mm (for wide screen projection) to 150 mm.
- Operates on 110, 120, 130, 220 and 240 volts, 50 60 cycles A.C. with built-in transformer for low-voltage lamp system.

With 90mm Colorplan f 2.5 lens, six-foot remote cord and snap-on projector cover (Cat. No. 98,461), the Pradovit N 24 is \$213.00.

LOW-VOLTAGE (HIGH CURRENT) PROJECTOR SYSTEM



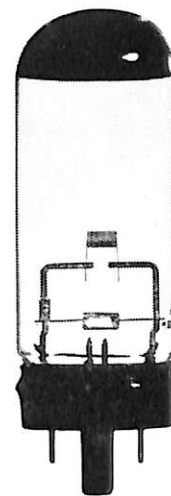
CONVENTIONAL HIGH-VOLTAGE PROJECTOR SYSTEM



Legend for Diagrams

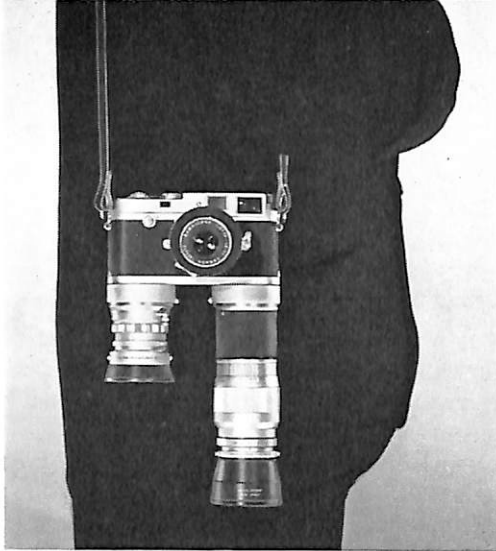
- M — Spherical reflector (mirror)
- L1 — Low-voltage (high-current) projection lamp
- L2 — High-voltage (low current) projection lamp
- C1 — Aspheric condenser lens
- H — Heat-absorbing filter
- C2 — Condenser field-lens
- S — Slide
- PL — Projection lens (LEITZ 90mm Colorplan f/2.5)

BASIC PRINCIPLE of projection systems is imaging of the lamp filament inside the projection lens by the condenser lenses. Conventional high-voltage lamp (L2) has large filament of thin wires whose image fills the projection lens (PL) aperture, thus resulting in a shallow depth-of-field. Modern low-voltage (high-current) lamp (L1) has small filament image in the projection lens, utilizing only the choice central rays of the lens to improve image sharpness. Dashed lines show how projection lenses image the slide, indicate the narrower cone-angle and increased depth-of-field obtained by low-voltage lamps which eliminate the need for refocusing of slides for cover-glass thickness variations, as well as tolerances permitted in paper "readymounts." Shaded area in L2 shows loss of light in high-voltage system almost entirely eliminated in low-voltage Pradovit so that lamp yields a light-output between that of a 300 and a 500-watt, 110-volt conventional line-voltage lamp.



Lamp for Pradovit N24 (above) is 150 watt, 24 volt model. Smaller lamp is for Pradovit N, operates at 100 watts, 12 volts.





Benser Base Plate

Even the Leicaman who has "everything" probably doesn't have this handy, new, base plate lens-carrier. It holds two accessory bayonet-mount Leica lenses, attaches to Leica "M" model base-plates. Just right for short picture trips. Price: \$39.00.



Valoy II Enlarger

Half the creative fun in photography lies in making big, crisp, praise- and prize-worthy prints from your Leica negatives with the Valoy II. The 50mm Focotar lens is especially corrected for enlarging. Or, use your 50mm Elmar camera lens if you like. The Valoy II is \$138.00; the Focotar lens, \$58.50.



Close-Up Equipment

Explore the world of the barely-visible with close-up accessories for your Leica. The Universal Copying Stand (#16,511) accepts any bayonet- or screw-mounting Leica and any 50mm Leica lens, makes photos at life-size, two-thirds, one-half and one-third life-size ratios. Price: \$78.00. Other close-up attachments from \$30.00.

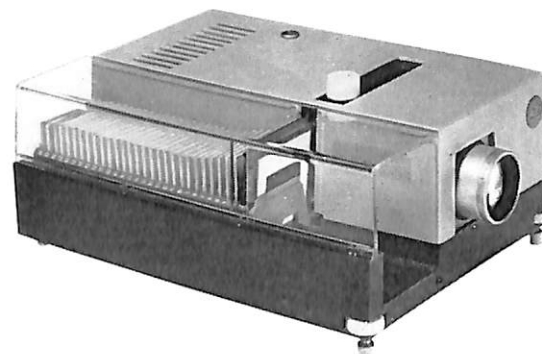


TEN
to make Leica



Leitz Projectors

Slide quality is no better than that of the projector which screens it. Leitz projectors are made in the same tradition of optical and mechanical excellence as the Leica itself. Choose among eight models; lenses available from 35mm (for wide screen projection) to 300mm, depending on projector. Prices begin at \$97.50



Leicina 8SV

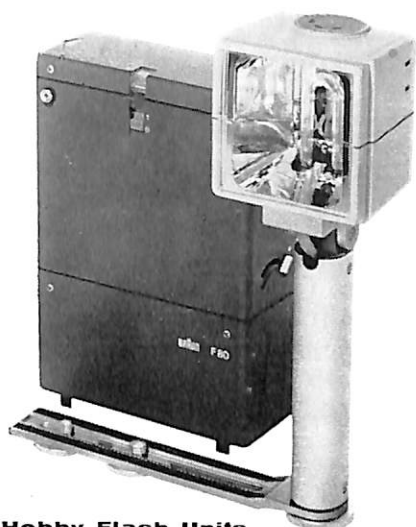
This zoom-lensed 8mm Leitz movie camera solves technical problems for you at the push of a button. Automatic electric-eye control produces perfect exposures on every frame; electric drive never dies in mid-scene. Its f/1.8 lens zooms from 7.5-35mm to handle any situation. Two speeds — 16 and 24 fps. Price: \$396.00



GIFTS



Leicamen happy



Braun Hobby Flash Units

There's a Braun electronic flash unit to handle any lighting needs from amateur to professional. From the pocket-sized F 25 to the F 80 "portable studio," the quality and reliability of the Hobby units are unvarying. Prices start at \$69.50.



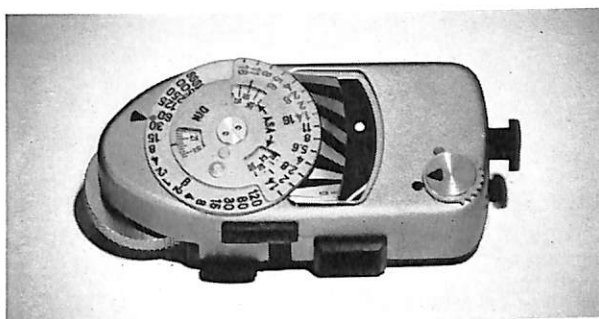
Accessory Lenses

Improve your photographic vision with extra lenses. Crisp-cutting Leitz lenses from 21mm to 400mm give full play to your creative urge, bend image and perspective size to your will. Some are as fast as f/1.4 for existing light work. All are as sharp and brilliant as Leitz alone can make them. Prices begin at \$66.00.



Slide Binding Equipment

Now is the time to give permanent protection to last summer's color slides. The Proloc Rapid Fastener (\$2.10) seals precious transparencies away from dust and scratches into any of several types of Perrot metal binders. Per-O-Slides accept transparencies right in their cardboard mounts. Or use Perrot-Color mounts for unmounted transparencies. The latter come in regular or ultra-thin styles, with or without special anti-Newton's rings glass. They are also available for either regular 35mm slides or Superslides. Prices from \$2.55 for 25 mounts.



Leica-Meter MR

This new cadmium-sulfide exposure meter, described elsewhere in this issue, is the last word in convenience, accuracy and sensitivity. Featuring automatic needle lock and an acceptance angle equal to a 90mm lens, it fits atop the Leica "M" models, sets shutter speeds automatically as the meter dial is adjusted to the light. Price: \$48.00



Combination Cases

Organized equipment marks the expert photographer. Help your favorite Leicaman to organize his with one of several Leitz combination cases. The small Combination Case, the Universal Carrying Case with interchangeable inserts or the infinitely-variable Benser Carrying Case system are sure to solve storage and carrying problems for any Leica owner. Prices begin at \$37.50.

close-up rule / Peter Moore

read exposure increase on your ground glass

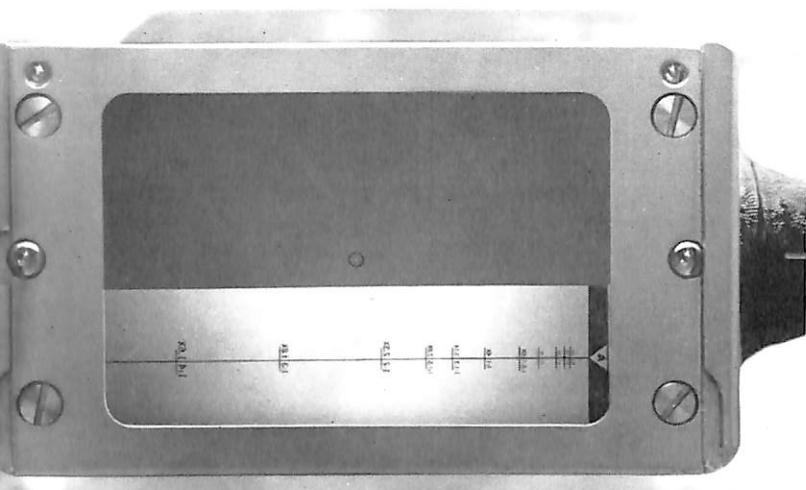


CHART can be read in Visoflex screen. For clarity, "A" triangle is shown. In use, its point should be at edge of picture.

Are complicated tables or complex calculations inevitable when close-up photography requires increased exposure? Until recently, I assumed that they were. But, since exposure increase is proportional to the area being photographed, we should be able to measure the field of view directly, and from this obtain the needed exposure compensation.

With this in mind, I checked the table in the Close-Up section of the Leica catalog. However, I found no reference in the chart to focal length, lens or subject distance — only a column cryptically entitled "ratio" and the area covered.

After much head-scratching, I came to a surprising conclusion. For a given area covered (the ratio of the image size to the object size), *all* focal lengths require the *same* exposure compensation and produce the same depth of field. The table works with any lens.

direct-reading rule

The accompanying Close-Up Rule is the end result of my deliberations. It shows instantly the required exposure increase for any close-up with any lens but it is designed with the Leica format and the Visoflex in mind. It will also work with other closeup devices

which indicate subject area, such as the BOOWU. Simultaneously, it shows the ratio of reproduction and the factor by which exposure must be multiplied to compensate for extra bellows extension.

Use of the rule is simple. Insultingly so. Frame and focus your picture as desired. Then hold the rule just in front of your subject, parallel to the film plane. Position it so that the starting mark "A" is just visible at one side of your ground-glass, subject frame or viewfinder image with the rule running parallel to a long side of the frame. Where the other short side of the frame cuts across the rule, the exposure factor, and ratio of reproduction can be read directly. Compensate your shutter speed or aperture accordingly, and shoot. It takes only an instant to use, is simple, accurate and requires no math. *(Whenever possible it is best to increase exposure time rather than aperture, since depth of field in close-ups is shallow and a small aperture is needed to retain as much depth as is practical . . . Ed.*

Want to know your depth of field? Note the ratio, consult the chart accompanying the rule and read *total* depth of field in inches for five appropriate apertures opposite the ratio. Note that depth of field, as well as exposure factor, is independent of focal length for a given ratio of reproduction. Extra copies of the rule can be obtained by making a same-size (1:1) photocopy or photostat.

mount the rule

For greater permanence, you can mount your rule on a good grade of matte board. As an even handier mount, I used the 10" side of a Kodak 18% grey card and gave the rule several coats of transparent plastic spray to seal it against moisture. When spraying the rule, I took pains to mask off the rest of the grey card, since I wanted to make meter readings from it. If it had gotten glossy, I would have had a gray mirror instead of an exposure aid. For convenience, I mounted the depth-of-field chart on the other side of the card.

Normal reflected-light meter readings can be very misleading when photographing very small objects covering only a small fraction of the negative area. Background tones can influence readings greatly. By taking a close-up reading with your meter from an

RATIO	AREA IN INCHES	TOTAL DEPTH OF FIELD IN INCHES				
		f/4	f/5.6	f/8	f/11	f/16
1:7	6.61 x 9.92	0.588	0.825	1.18	1.62	2.36
1:6	5.66 x 8.51	0.441	0.620	0.885	1.21	1.77
1:5	4.72 x 7.09	0.315	0.440	0.632	0.867	1.26
1:4	3.78 x 5.66	0.209	0.296	0.422	0.580	0.840
1:3	2.84 x 4.26	0.126	0.178	0.252	0.347	0.505
1:2	1.89 x 2.84	0.063	0.087	0.126	0.173	0.252
1:1.5	1.42 x 2.13	0.039	0.055	0.079	0.110	0.158
1:1.33	1.26 x 1.89	0.031	0.047	0.067	0.091	0.134
1:1	0.945 x 1.42	0.020	0.031	0.043	0.059	0.083
1.5:1	0.630 x 0.945	0.012	0.016	0.023	0.032	0.047
2:1	0.472 x 0.709	0.008	0.011	0.016	0.022	0.032
3:1	0.314 x 0.472	0.005	0.007	0.010	0.013	0.018
4:1	0.236 x 0.354	0.003	0.005	0.007	0.009	0.013
5:1	0.189 x 0.284	0.002	0.004	0.005	0.007	0.010

18% gray card, you can make an accurate reading for almost all types of subject matter. Place the card at subject position facing the camera. In a predominantly side-lit situation, tilt the card so that it faces midway between the camera and main light source. Similar results can, of course, be obtained without the grey card by using an incident light meter at the subject position.

Here are some other things to keep in mind: Depth of field is at a premium in close-up work. Use a tripod when possible so that small f/stops and relatively long exposures are practical. And when you must hand-hold the camera, use a film fast enough to allow an exposure of at least 1/125th at an aperture sufficient to give the depth of field needed. In close-ups, camera or subject motion is magnified in the same way as in tele work.

For stationary subjects, use a copy stand, a tripod with reversible center column or the tiny Leitz table-top tripod and large Ball-Joint head.

If you really want to travel light, you can cut the rule down to six inches or so and still retain the most important data. Make sure you cut off the end farthest from the A mark. I cut down a normal 8 x 10 18% grey card to 5 x 8, fastened a rule along the eight inch side and use it when travelling light on nature rambles with Leica and Visoflex, table-top tripod, 65 and two or three OTRPO tubes.

A
5:1 36X
4:1 25X
3:1 16X
2:1 9X

1.5:1 6X

1:1 4X

1:1.3 3.1X

1:1.5 2.8X

1:2 2.3X

1:3 1.8X

1:4 1.6X

1:5 1.4X

1:6 1.4X

1:7 1.3X

CUT OUT ON
GREY LINES

GLUE RULE TO
MOUNTING BOARD
OR EDGE OF 18%
GREY CARD

LEICA EXPOSURE FACTOR RULE

1. Focus and frame the subject.
2. Place rule in subject area, parallel to film plane and with point A at one edge of the long dimension of the picture area.
3. At end of picture area opposite A, read ratio and exposure factor directly from rule.
4. Make exposure reading and adjust shutter speed or aperture, applying exposure factor to meter reading.

MOUNT DIRECTIONS
ON REVERSE SIDE
OF THE CARD

TO SHORTEN RULE,
CUT END OPPOSITE "A"



TRINOVID glasses show 40% wider field than conventional models of same power.



BINOCULARS— how to get your money's worth

must the buyer really beware?

Your grandmother may have bought her eyeglasses from a binful at the general store. She picked through the heap and bought the pair that seemed to help most. And those headaches that used to come after an evening's reading? No one thought to blame the eyeglasses!

Today we are very careful to match our spectacles to our eyesight with the help of trained specialists using the best available scientific equipment. Dime-store eyeglasses have disappeared because we know they were worth even less than their small cost.

Nevertheless, today's optical sophistication has itself given rise to a special dilemma, particularly in the field of binoculars. The very people who are alert to the value of using only top-quality optics find themselves often unable to distinguish the good from the indifferent and downright bad in binoculars. The fact is that, without special knowledge and equipment, it is very difficult to tell by inspecting the glasses in a dealer's shop. Many a potential user has looked first at and through a binocular tagged \$25 and next through another marked \$250 at his dealer's without noting any real difference in results. His natural question, then, is, "Why does one cost 10 times as much as the other?" The next question, of course, is, "Why should I buy the high-priced one if

I can't tell the difference between them?"

Good questions, both. But obviously there *are* differences between the cheap and the expensive binoculars. And, in the long run, they must justify the higher price to those who pay it.

What are the differences between the outstanding binocular and the inferior one? What do specifications like "8 x 32," "field of view," and the like actually mean?

magnification and objective diameter

The first figure is the magnification offered by the binocular — six, eight, ten times the linear size of the naked-eye image. The second figure is the diameter in mm. of the binocular's objectives (large front lenses). From these two factors evolve such other measures of binocular performance as field width (also governed by the field lens), relative brightness, twilight factor. They also affect the size and weight of the binocular.

Too many people are concerned first with magnification when buying binoculars. It is important to low-light performance, as we shall see, but other considerations are equally important. The power of your glasses should be determined by the main use to which you will put them.

Magnification will bring a subject "closer" and increase the amount of visible detail. But magnification will also increase the effect of tremor — which works against clear vision. At the same time, magnification decreases the size of the field of view and (with a given-size objective lens) decreases the brightness of the image.

Thus, a 10x binocular might be excellent for use across vast distances in the clear mountain air of the American West but a possible handicap in heavy woods (where no long open stretches exist) where moderate magnification and a wider field of view are more useful.

And, generally speaking, an increase in magnification produces a larger, longer heavier binocular which can be burdensome under many field conditions. However, certain new binocular designs such as the Leitz TRINOVID make it possible to produce 10x binoculars which are actually small enough to fit into a pocket, yet perform like much larger glasses of the traditional type. Power-for-power of magnification, they have less bulk than binoculars of less advanced design. Experience suggests that a medium-power glass of 6x or 8x magnification is best for all-around use. Glasses of this power offer a good compromise between light weight, small size and ample image enlargement. More powerful models, such as 10x are recommended for long-distance observation under good seeing conditions. A 10x glass, incidentally, is the most powerful which should be used hand-held although the small TRINOVID 10x binoculars are far easier to hold steady than conventional glasses of the same power. More powerful glasses than this magnify uncontrollable arm, head and body movements to the point where clear hand-viewing is impractical for many people.

But magnification and the size of the objectives by themselves do not define performance; they merely outline it. For instance: A large dime-store magnifying glass will magnify the subject, but without producing really good image quality. The reason, of course, is that correcting lenses and lens systems to produce high definition and clarity is a costly process. A good rule of thumb in choosing optical equipment is: If the price makes your mouth water, the performance may make your eyes water.

It is not possible, in a binocular, to eliminate all aberrations completely, but a fine glass will display very few.

low-light performance

Several factors influence our ability to see detail through binoculars in dim light. Of these, the three main ones are a) the amount of light transmitted

by the binocular, b) the magnification and c) the ability of your own eyes to accept the transmitted light. The latter element is probably least appreciated by binocular users. Many binoculars — perhaps most — actually transmit *more* light than your eye, even at its widest-open, can accept.

One guide to the light-passing ability of a binocular is the diameter of the "exit pupil." Exit pupils are the small circles of light which are visible in the eyepieces of the glasses when they are held at arm's length and pointed at the sky or other broad light source. Obviously, the larger the exit pupil, the more light that is transmitted. The diameter of this circle is determined by dividing the diameter of the objective by the magnification of the glasses. In the case of a 10 x 40 binocular, this would be $40 \div 10$, or 4mm; a 7 x 35 glass would have an exit pupil of 5mm.

Little appreciated, however, is the fact that the eyes of binocular users vary a great deal in their ability to respond to dim light. Age is a great factor in the eye's response to light. And, individuals of the same age may vary in this ability, too.

About binoculars, J. R. Hebditch* has said, "... the most efficient instrument will be one having an exit pupil not smaller than the user's own pupil, *measured in the worst lighting conditions under which the binocular is likely to be used.*"

The same writer says, "Pupil diameters vary considerably, usually *averaging* about 7mm in early childhood, about 6mm in adolescents, 5mm in young adults, 4mm in early middle life, 3mm in late middle life and 2mm in old age."

A melancholy conclusion derives from these facts. Many a 40-year-old sportsman, for instance, owns heavy, expensive, 7 x 50 "night glasses." Their 7.1mm exit pupil "guarantees" good twilight and night vision. But what he doesn't realize is that, in early middle age, *his own eye pupils* probably don't open beyond 4mm at most. They will accept less than one-third of the light his 7 x 50 glasses make available to them. An exit pupil of 4mm would be ample for his eyes under the worst light conditions, and he would have saved money, weight and bulk in the bargain had he known it! The average person can take full advantage of the light transmission of a 7mm exit pupil only in early childhood. And glasses with a four or five mm exit pupil are most efficient for young adulthood through early middle age.

relative brightness

For many years, binoculars have included in their specifications a "relative brightness" figure as a guide to their low-light performance. This is arrived at by taking the square of the exit pupil. Thus, a

*"Binoculars and Telescopes For Field Work," *British Trust for Ornithology Field Guide*, No. 2, 1961, Rev.



LEITZ TRINOVID binoculars are light, slim, waterproof, rugged.

glass with an exit pupil of 4mm has a relative brightness figure of 16; a 7.1mm exit pupil gives a relative brightness of 50, and so on. The theory is simple: the more light transmitted, the better the low-light performance. But, as mentioned, the useable light reaching your eye is actually governed by the maximum eye-pupil diameter. And, a number of years ago, it began to be suspected that the relative brightness theory was a little *too* simple. Practical tests involving trained observers showed that glasses with higher magnifications enabled observers to see more in dim light despite having somewhat lower relative brightness factors than other glasses tested.

The answer seemed to lie in the previously overlooked factor of magnification. It was the combination of magnification *and* relative brightness that affected the ability to see detail at low light levels. In dim light, magnification turned out to be even *more* important than exit pupil diameter.

Having learned the importance of magnification to low-light performance, optical men tried to come up with a new measure or, at least, guide in comparing binoculars' abilities in this area. The result — a term now just beginning to appear in specifications — is the "twilight factor." It is derived from a formula which takes *both* magnification *and* exit pupil into consideration in evaluating performance. It is defined as the square root of the product of the objective diameter times the magnification ($T = \sqrt{D \cdot M}$). A 7 x 35 glass thus has a twilight factor of 15.5 ($\sqrt{7 \times 35}$). A 10 x 40 binocular's factor is 20 ($\sqrt{10 \times 40}$). Twilight factors are not, numerically, as large as relative brightness figures. Be sure to distinguish which figure is being given when checking the specifications of glasses in which you are interested. The larger the twilight factor,* naturally, the better the dim-light performance.

*Twilight factors are valid as performance guides principally when derived from exit pupils no smaller than the largest opening of the eye pupils of the user. In most cases, this will be from 4-6mm. The eye, again, is the limiting factor in the usefulness and application of performance comparison figures.

wide vs. normal field

Another binocular feature which you should consider is the field of view — that is, the width of the total scene in front of you which can be seen through the glasses. This is governed by both the magnification and the design of the eyepieces. It is usually expressed for a distance of 1000 feet, yards or meters, depending on the individual manufacturer. For example: the Leitz TRINOVID 6 x 24 model is marked "212m 1000m," which means that the width of a scene 1000 meters away is 212 meters. This is also equal to 212 yards at 1000 yards or 212 feet at 1000 feet. The field width, so expressed, is actually a translation of the *angle* of view included by the binoculars. Some binoculars actually state the field of view as 7.5°, 3°, etc., rather than in linear units. A degree of angle is equal to 52.5 feet at 1000 yards.

As mentioned, both magnification and eyepiece design determine the width of field seen through a binocular. The higher the magnification, the narrower the angle of view and the subsequent width of field. But when, by means of the eyepiece lens, we look through the binocular, we actually examine the image produced by the objective lens much as we examine an object with a magnifying glass.

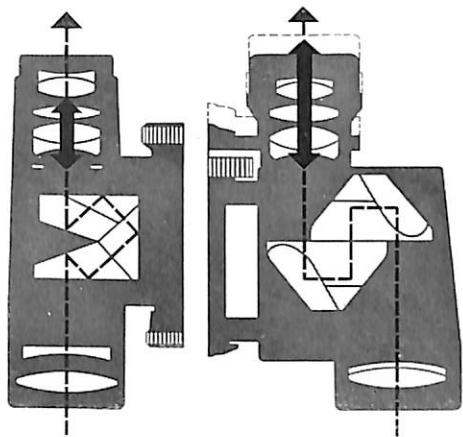
Standard eyepieces "see" less of the image than do wide-angle eyepieces. What's more, if the eyepiece is to cover a wide angle, objectives and prisms must be large enough to transmit image-forming rays to create this wider image. Thus, standard binoculars are easier and less costly to manufacture and to correct for aberrations, and so cost less. Their disadvantage, of course, is that it is often impossible to take in at a glance everything that you are interested in seeing through the binoculars. At a football game, for instance, a forward pass may shoot out of the field of view of a binocular with standard eyepieces. By the time you have searched for the receiver through such glasses, the action may be over. Wide-angle glasses, on the other hand, would include *all* the action, without the need to scan.

At the theater, a 6x widefield glass, for instances, will give you a close look at the actors yet include the important parts of the stage set.

Wide-angle eyepieces, like wide-angle camera lenses, are more costly, but provide greater convenience.

center vs. individual focus

Binoculars have one of two types of focus control: center or individual eyepiece. Center focus models usually have a single focusing wheel on the axis which fastens the two binocular halves together. By turning it, you move the eyepieces to set the distance



NEW PRISMS (L.) permit small housing; usual system is bulky.

focus quickly for both halves simultaneously. Such models usually have adjustable focus for the right eyepiece as well to correct for differences in eyesight between both eyes. After the focus has been set by center-wheel for the left eye, the right eyepiece is adjusted for individual vision in that eye. Once the right eyepiece is set, the difference in vision is compensated for, and all focusing can be done by the center wheel. The collar of the right eyepiece has a scale to show the setting of the lens after it has been adjusted for individual vision. By noting this setting, you can quickly adjust the eyepiece for personal use, without the need for visual focusing, after other have used the binocular.

The advantage of center focus glasses is the speed with which they can be focused on the subject. Their disadvantage is that, in conventional models, because of the external sliding tubes which move both eyepieces at the same time during focusing, they cannot be made as water-tight as models with individual eyepiece focusing.

As the name implies, glasses with individual eyepiece focusing require separate focusing for each half of the binocular, each time subject distance changes. This is done through rotating sleeves which hold the eye lenses. It is possible to make these models more water-resistant than center-focus types, but at the cost of slower operation.

A third type of focusing—newly patented by Ernst Leitz, G.m.b.H. Wetzlar — allows rapid focusing *and* a water-tight housing. Used in Leitz TRINOVID binoculars, its basis is the movement of optical elements *within the binocular housing*. Since it eliminates external sliding tubes, it makes possible a completely waterproof binocular with the advantages of fast-acting, center focusing. It also makes possible the individual focus of the right eyepiece by means of a second wheel on the same axis as the distance focusing wheel rather than by means of a rotating eyepiece. The TRINOVIDS thus combine the advantages of fast, center focusing with the water-tight qualities of individual eyepiece models.

resolution

This is what gives crisp, detail-filled image quality to a binocular. It is difficult even to define, and difficult and costly to achieve. It is a result of both top-quality design and manufacture, both optical and mechanical. And it is a quality that can be judged only while viewing outdoors in clear air — never through window glass! More than any other single aspect of binocular quality, resolution accounts for the wide difference in price among glasses which superficially, look alike.

prisms

An important part of binocular optics, to which buyers often give too little consideration, is the prism system. Its design affects the weight and bulk of the binocular, the light transmission (if the prisms are undersized) and, in some case, the frequency of repairs.

The familiar shape of most prism binoculars is dictated by the prism within the housing. It consists of two porro prisms, carefully aligned and held in alignment in one of several ways. The size of the prisms, and their orientation to each other produce the odd, bulky outline of conventional binocular housings. The larger the objective lens of the glass, the larger the porro prisms needed for full light transmission — and the heavier and bulkier the resulting binocular.

At the same time, the prism system *can* become a cost-cutting area. When this happens, price is held down, but performance suffers. For instance, top-quality binoculars employ metal clamps to hold the prisms rigidly in alignment against the ordinary shocks and jars of field use. Clamping is an expensive method of installation, but worthwhile because it minimizes damage and the resulting need for repairs. And, should repairs become necessary, the clamping method makes them possible.

Cheap glasses on the other hand, may have their prisms merely glued in place or simply pressed into sealing wax. Neither method resists shock well. And, when damage occurs, repair is often impossible — or, at best, more expensive than the original cost of the binoculars!

Prism design itself, as well as the mounting method, has an effect on damage resistance. A prism of radically different design from the conventional porro, for instance, is used in the new Leitz TRINOVID binoculars. Its components are cemented into a single unit which must virtually be broken before any shock to the glasses can cause misalignment of images, or render the binocular useless. This unusually compact prism permits the binocular housing

CHOOSING A BINOCULAR

USE		6 x 24*	8 x 32*	10 x 40*
GENERAL		B	A	C
BOATING		A	C	NR
HIKING		A	A	B
MOUNTAINEERING		B	A	A
BIRDING		A	A	C
SPORTS	OUTDOORS	A	B	B
	INDOORS	A	C	NR
HUNTING	WOODS	A	B	NR
	OPEN	C	A	A
LOW LIGHT USE		B	B	A
TWILIGHT FACTOR		12	16	20
FIELD (at 1000 YDS.)		212 yds.	150 yds.	122 yds.
WEIGHT (OZS.)		15½	17	19
LENGTH (INS.)		3¼	4½	5½

A = Recommended
B = Very Good

C = Good to Fair
NR = Not Recommended

* Leitz Wide-angle TRINOVID model

to be kept to pocket size, despite performance characteristics equal to or better than larger glasses.

Another aspect of the prism system which separates the top-quality binoculars from the "bargains" is prism size. To keep prices low, undersized prisms are sometimes used in cheap glasses. When this is the case, a man who buys a 10 x 50 model, for instance may not get what he paid for. The 50mm objective lens transmits a lot of light, but it is choked off by the small prism and results in a dimmer image that the specification of objective diameter and magnification indicate.

Fortunately, undersized prisms are something that can be spotted readily in the store. The binocular should be held at arms' length, pointed at the sky or broad light source so that the exit pupil can be observed. If the prism is the proper size, the exit pupil will be a circle of uniform brightness. But if the prism is too small for the objective lens, the pupil will appear to have shaded segments which enclose a small uniformly bright rectangular area.

coating

Good binoculars are anti-reflection coated on the air-to-glass surfaces of both lenses and prisms. The coating can be recognized by its purplish color, and its purpose is to minimize reflections which occur inside the binoculars as light passes through, entering and leaving the various glass lens elements and prisms. In a binocular which has 10 or 12 uncoated elements the light loss from internal reflection can be as high as 45%. Coating also improves image contrast and eliminates haziness which results from internal reflections.

Thus, the binocular which has fully coated optics transmits more light (valuable for dim-light viewing) and forms crisper images with reduced glare (valuable for bright-light use) than cheap uncoated or partially coated glasses can.

alignment

Since binoculars provide a separate "telescope" for each eye, it is vital that both barrels be optically parallel so that your eyes can fuse both images into a single circle of view. Unfortunately, this alignment, or collimation, is difficult to check while you examine glasses at the store.

Your eyes, which are highly automated organs, will strain their utmost to compensate for collimation errors in the binocular as you look through a badly-aligned glass. A few minutes' viewing may show nothing wrong. But used for extended periods, an uncollimated binocular will cause eye-strain and headaches. Only after it is too late will you discover the shortcomings of an unreliable binocular. If the misalignment is severe enough or if it is vertical rather than horizontal, you may never be able to resolve the two images into one.

Rugged construction, mentioned previously, is also important to binocular alignment. Cheaply-made glasses can sometimes go out of alignment as a result of even a slight knock against a tree or rock while in use in the field. Poorly-anchored prisms can shift, throwing optical axes badly off center. And, since binocular repair is costly, a poorly-made, easily-damaged binocular can cost more to repair than it did to buy in the first place! In the long run it is often less expensive to pay the cost of virtually shock-proof optics of a glass like Leitz TRINOVID than to maintain less sturdy binoculars which may need frequent repairs.

after all is said

We have examined some of the differences between a quality binocular and an inferior one which, superficially, may look just like it! You can check a few of them right at the dealer's counter. Others, with some difficulty, can be checked when there is access to normal binocular viewing conditions (i.e.—across long distances through clear air, in the woods at twilight, etc.). Many cannot be checked at all without special equipment, skill and knowledge.

But to get your money's worth when you choose a binocular, you won't go wrong if you keep these things in mind: You should not buy specifications, but performance—sharp, brilliant images, filled with detail and glowing with clean, true colors. Look for a binocular which you can enjoy for the rest of your life and whose initial cost is its only cost. Only top-quality glasses can offer assurance of lifelong, trouble-free performance. And remember: the most reliable guides to the quality of a binocular are the reputations of its maker and the dealer from whom you buy it.

This article passes along the personal experiences of one photographer who has solved his film-processing problems in terms of a single developer. We hope it will be useful and interesting to you. But it is not

necessarily an editorial recommendation for Rodinal above other products. As the author himself points out, there are many excellent developers. Rodinal is his own choice.

RODINAL: a personal viewpoint / C. B. Nieberding

experiences in one-developer photography

Choosing one of the many available film developers can be a problem for those who photograph anything and everything under a variety of lighting conditions and with one or more films. The occasional photographer who exposes a black and white film under a variety of lighting conditions has little or no problems because he seldom uses the same developer more than a few times. And he is constantly on the search for a better one — which he rarely finds! He may even enjoy the different results he gets each time. But to the serious worker, amateur or professional, changing from developer to developer can be a serious drawback.

To begin with, why limit yourself to just one developer? The answer is for the sake of simplicity, consistency and freedom. Your photograph should, for the most part, be creatively complete when you trip the shutter. Development should be a complementary procedure and not a creative venture in itself. The greatest obstacles to the photographer are the variables he encounters, and variables either complicate or restrict progress. Using one developer minimizes these variables and enables you to control them to your advantage.

In my own search for the "ideal" developer, I have used several of the more popular replenisher types and most of the one-shot specialty kinds. But the difficulty with using two or more solutions as standard developers is that you never quite learn to exploit any one to its fullest, because of the different procedures entailed with each one. Replenisher types are good, and with experience you can manipulate any given one to handle all your needs. But experience leads me to believe that, even with the most exacting replenishment, the developer tends to change in characteristics, making critical control almost impossible. I feel personally that the newer developers with two- and three-minute developing times are too fast-working for critical control, especially when trying to attain a given gamma level under a variety of con-

trast conditions. One-shot developers seemed to answer my needs, but again I found I was either harassed with short developing times or by a high cost-per-roll. These factors led me to try Rodinal.

Rodinal

I must confess that my first results were no great improvement over the quality I had been getting with any of the previous developers. But the cost was only four cents a roll; even less when two or more rolls were processed together. After a few months' experience I saw a distinct rise in the quality of my photographs. (I would like to emphasize here that I concede that one developer cannot be absolutely best for all situations. But I shall try to make clear why I feel Rodinal nears this goal with little compromise.)

I find Rodinal to perform consistently throughout the life of the bottle. Air has little chance to get at the solution in the bottle when one makes use of the provision in the rubber seal for the insertion of a hypodermic syringe. Even with removal of the seal, the shelf life of a half-bottle exceeds six months. The quality of Rodinal needed for mixing is so small that I suggest using either a 10cc syringe or graduate bought from your pharmacy so that accurate measurement of the solution can be made.

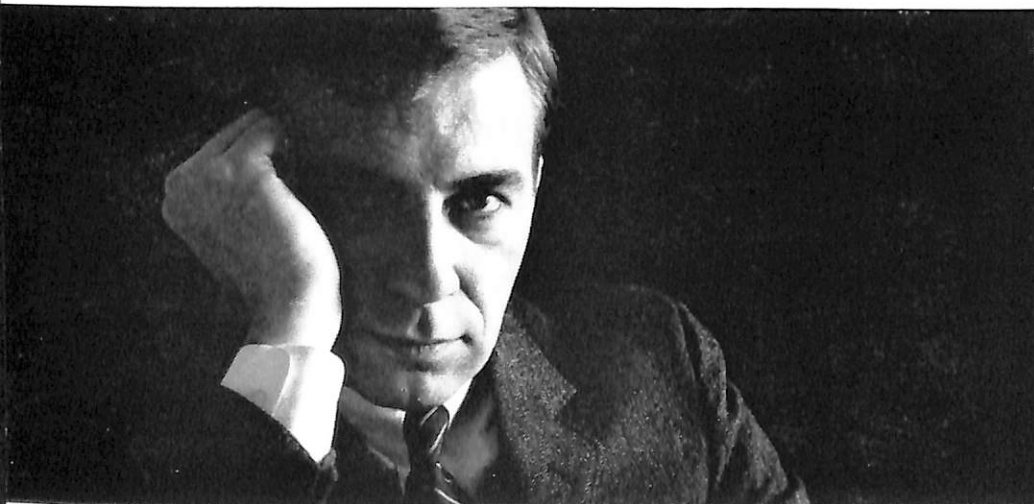
I find that the combination of Agfa IFF and Rodinal produces the finest grain and greatest resolution of any film-developer combination I have tried. With fast films like Agfa IR or Kodak Tri-x, exposed at 3000 ASA, the results are amazingly sharp, have excellent shadow detail, and an acceptable grain pattern.

Plus-x

But in experimenting with various films I discovered the excellent combination of Kodak Plus-x and Rodinal. It allows me to handle everything from bright sun conditions to normal existing-light indoor situations and gives negatives quality that produces ac-

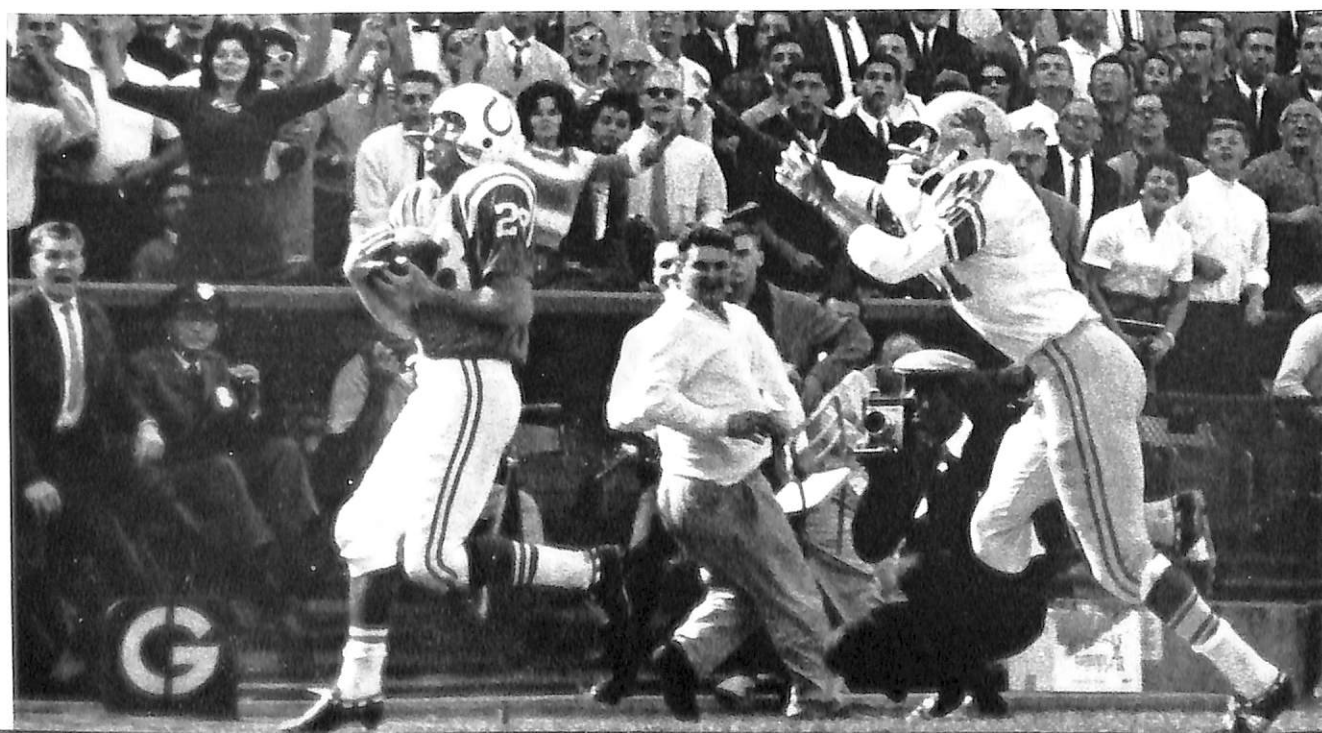


ASA 160



PLUS-X

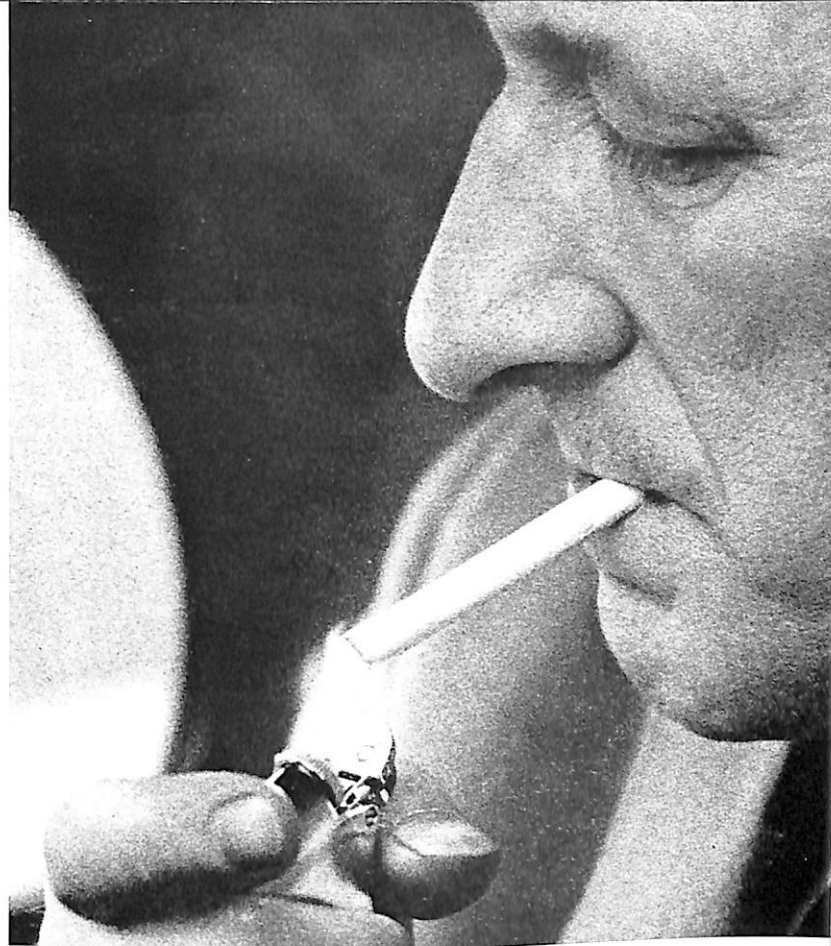
ASA 400



ASA 800



ASA 400



14X enlargement shows tight grain, good sharpness.

ASA 1600

TRI-X

ASA 3700



ASA 6400



ceptable enlargements to thirty diameters. I have discovered that Plus X can be exposed at ASA indices from 80 to 800 and compensated accordingly without producing fog or excessive contrast. My photographs exposed at ASA 800 are still printable on my normal paper (grade #3) because the high dillution of 1:85 allows the shadow areas to develop with normal speed and the denser areas more slowly, thus reaching a gamma of about .6. (Needless to say, I don't mix shots taken under both high and low contrast conditions on the same roll. An example of how Plus-X film can be exposed differently under a variety of conditions with the necessary compensation to attain about a gamma of .6 is shown in Chart I.

CHART I PLUS-X - RODINAL

Light Intensity	Contrast	ASA	Dilution	Time @ 68°F.
Bright	Highest	80	1:100	10½
Bright	High	125	1:100	11½
Bright	Moderate	160	1:75	11½
Bright	Low	400	1:50	12
Dim	High	400	1:75	12½
Dim	Moderate	400	1:50	13
Dim	Low	600	1:50	14
Very Dim	High	800	1:75	15
Very Dim	Low	800	1:50	15½

The best combination, of course, results under normal conditions (which account for about half of my pictures). The figures for this are on line three of the Plus-X chart. For portraits, especially under strong flood lights, I find an index of 160 ASA for Plus-X, developed 1:85 for 12 minutes, produces excellent shadow detail and resolution even in the brightest highlights of the skin. I might add that since using Rodinal to control contrast, I have rarely needed any tricks like burning-in or dodging during enlargement. This has saved me hours of darkroom work. All illustrations are straight prints, and have not been manipulated during printing.

Tri-x

When I need a film speed higher than 800 ASA, I use Kodak Tri-X. I rate it at from 200 to 2000 ASA, depending on the situation. When absolutely necessary, I even go to indices of 3200 and 6400 ASA. Notice in the photograph on page 25 that even when Tri-X is exposed at 6400 ASA some detail is present in the darkest shadow. The lighting in this photograph was so dim that a meter reading with the booster cell attached to the Leica MC meter was only possible on the brightest part of the woman's white dress. The lens was opened an extra one-and-a-half stops to provide for the darker picture areas. The glow of the cigarette in her hand is a good indication

of the light level! Developing Tri-X in Rodinal is seldom recommended in most charts on film-developer combinations, I suspect because of the slight increase in graininess compared to that produced when Tri-X is developed in some of the finer-grain developers. But at 800 ASA the resolution and shadow detail of the Rodinal Tri-X combination are well worth the slight difference in grain structure. Chart II shows the exposure possibilities I have explored with Tri-X developed in Rodinal.

CHART II TRI-X - RODINAL

Light Intensity	Contrast	ASA	Dilution	Time @ 68°F.
Bright	High	250	1:85	14
Bright	Moderate	400	1:75	14½
Bright	Low	400	1:50	14½
Dim	High	600	1:75	15½
Dim	Moderate	800	1:75	16½
Dim	Low	800	1:50	16½
Very Dim	High	1200	1:65	17½
Very Dim	Low	1600	1:50	18½
Very Dim	High	3200	1:65	20
Very Dim	Low	6400	1:50	22½

Tri-X gives best results at ASA indices from 400 to 800 under moderate contrast conditions. The decision to expose it at higher indices is governed by necessity only. When the initial meter reading in poor light indicates f/2 at longer than 1/30th of a second, for instance, I reset the ASA dial of my meter to align 1/30th of a second with f/2, keeping f/2 aligned with wherever the light meter needle is positioned. Then, whatever number appears in the ASA window governs my developing procedure. However, ASA 6400 is my limit with Tri-X. When light is so poor that it calls for a higher index, I would rather drop to a 1/15th of a second or slower if the subject is interesting enough. But, unfortunately, speeds this slow usually shift your concentration from the subject to the task of holding the camera steady.

In comparing the data in the two charts, it is pretty clear that, if you must use two films to handle all your needs, you can handle them basically the same way with only one developer such as Rodinal. The details and procedures are routine. In my own case, they are so well memorized that I can carry out developing intelligently each time without error.

I should stress again, however, that no one developer will produce the very best results for all situations. The value of using one developer lies in its ability to free the serious photographer from darkroom technical problems. It allows him to use his time and effort to learn to see creatively and instinctively, without worry about how development will affect his results.

sure, the M 3 is rugged...

but this is ridiculous!



5X ENLARGEMENT of "after-the-fall" negative proved to be as sharp as the "before" pictures.

Sky-diving is a sport full of thrills. Unexpected ones, sometimes. Take, for instance, what happened recently to Charles R. MacCrone, a Leica-using aerospace engineer with the National Aeronautics and Space Administration who spends his spare time jumping out of small planes a mile or more in the air.

MacCrone and his fellow sky-divers have added the making of stills and movies to their aerobatic pastime. One day, he and Ron Radhoff, president of the Huntsville (Ala.) Sky Divers, started out to make a series of mid-air pictures. MacCrone had his Leica along, looped to his wrist by a line through one strap lug...

But let him take it from there. Here's what he wrote to us recently about his adventure:

"I swung out on the step of the 170B for a poised exit. Things started out fine. I went off head high and watched Ron dive after me. When he swung around and started in we both stuck our cameras up and started shooting...

"I kept the Leica up and cranked off three shots but didn't know if I had gotten Ron or just sky. We had planned for me to finish up with a back loop for the movie so as we went through 3,000 feet, I dropped my arms and batted out a quickie. I spotted Ron about 50 feet away and got ready to pull at 2,200 feet. When I got the opening shock my left arm was snatched down and I felt the camera go. I then felt the very distinct snap when the lug pulled out. This was impossible! It couldn't be happening! Looking down to check my position so I would know where to pick up the pieces, I could see the camera as it tumbled away from me. What a sickening feeling!

"Two other club members met us when we landed and we all went to where I estimated the camera should be. We found it in just a couple of minutes — all in one piece. That didn't make me feel any better. What good is a camera body full of junk? The lens and camera top were encrusted with clay so I tapped the camera lightly against my hand to shake out most of it. No rattles! I used a finger to clear away the lens. Rather gingerly, I advanced the film crank to see what would happen. It worked fine. Then, just for kicks, I pressed the shutter release — sitlll okay. I tried it again and everything seemed to function

normally. This was really unbelievable. On first glance, the only obvious damage was a small chip out of the leatherette finish on the body. I decided not to fool with it anymore since working the rewind and shutter mechanism might cause more damage to the intricate parts that might still be repairable. When we got back to the packing area, temptation got the best of me and I took two more shots on the remote chance I might get something on film.

"The following day I sent the film to a local firm for processing. Imagine my surprise on finding that all shots taken, both before and after the accident, were good! I say "good" with some reservation. Incorrect exposure was used on the free fall shots; Ron and I were too far apart for the 50mm lens, and the local firm doesn't use a fine grain developer on Plus X film — or any other film.

"Therein lies my story. Anyone familiar with the Leica M 3 is aware of the intricate mechanism incorporated in the shutter and in the rangefinder-viewfinder optics. One mirror in the viewfinder was apparently jarred loose but the rangefinder window still provides an image. The glass pressure plate (This was an early M 3. Current models use metal plates... Ed.) inside the rear cover was broken. This was the total extent of damage suffered after falling 2,000 feet and impacting, on its top, two and one-half inches into clay soil. The lens in the camera at the time was the collapsible 50mm Elmar f/3.5. Naturally the camera impacted with the lens in the extended position. The lens was undamaged and still collapses and extends normally.

"This is hardly a recommended treatment for any camera but it does indicate the accidental punishment that this well built and *rugged* piece of precision equipment will withstand.

"Needless to say, the next exit my Leica makes from an airplane, will find it firmly attached to a wrist mount that, in turn, will be firmly attached to me."

We join Mr. MacCrone in advising against dropping the Leica 2,000 feet. Or two feet, for that matter. It is, after all, a precision instrument.

But it *is* nice to know that it can take a little bump now and again, should the situation arise.

EUROPEAN PHOTO TOUR

Word of a second "Europe Through Your Leica" tour to take place in mid-summer of 1964 and featuring a visit to the Leitz factory in Wetzlar, has just been received. It will be similar to the tour described in Leica Photography #3/62. Further details will appear in our next issue or can be had by writing to:

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